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XXVIII. *Some Particulars relative to the Production of Borax.*
In a Letter from William Blanc, Esq. to Gilbert Blane, M.D.
F. R. S.

Read May 17, 1787.

MY journey to the northern mountains in January last, in attendance upon the Vizier, gave me an opportunity of satisfying, in some degree, my curiosity on the subject you are so desirous of being informed of, the production and manufacture of Borax. The place which his Excellency visited is called Betowle, and is a small principality in the first of the northern mountains, where they rise from the plains of Hindostan, and is distant from Lucknow about 200 miles N.E. The town is a principal mart, where the commodities of the mountains are exchanged for those of the plain. The Raja, or Prince of the country, holds his possessions in the hills as an independent sovereign; but for those on the plain he owes fealty, and pays tribute to the Vizier. He therefore embraced this opportunity of paying homage in person to his Lord. During his stay at court, I had an opportunity of making the enquiries I wished from his people, and particularly from his Dewan or Minister, who had with him some of the inhabitants of the place where the borax is made.

This saline substance, called in the language of this country *Swagab*, is brought into Hindostan from the mountains of Tibbet. The place where it is produced is in the kingdom of

Jumlata, distant from Betowle about thirty days journey north. Jumlata is the largest of the kingdoms in that part of the Tibbet mountains, and is considered as holding a superiority over all the rest.

The place where the borax is produced is described to be in a small valley, surrounded with snowy mountains, in which is a lake, about six miles in circumference, the water of which is constantly hot, so much so that the hand cannot be held in it for any time. The ground round the banks of the lake is perfectly barren, not producing even a blade of grass; and the earth is full of a saline matter in such plenty that, after falls of rain or snow, it concretes in white flakes upon the surface, like the *natron* in Hindostan. Upon the banks of this lake, in the winter season, when the falls of snow begin, the earth is formed into small reservoirs, by raising it into banks about six inches high; when these are filled with snow, the hot water from the lake is thrown upon it, which, together with the water from the melted snow, remains in the reservoir, to be partly absorbed by the earth, and partly evaporated by the sun; after which, there remains at the bottom a cake, of sometimes half an inch thick, of crude borax, which is taken up and reserved for use. It can only be made in the winter season, because the falls of snow are indispensably requisite, and also because the saline appearances upon the earth are strongest at that season. When once it has been made upon any spot, in the manner above described, it cannot be made again upon the same place, till the snow shall have fallen upon it and dissolved three or four times; after which the saline efflorescence re-appears, and it is again fit for the operation.

The borax, in the state above described, is transported from hill to hill upon goats, and passes through many different hands before

before it reaches the plains, which increases the difficulty of obtaining authentic information regarding the original manufacture. When brought down from the hills, it is refined from the earth and gross impurities by boiling and crystallisation. I could obtain no answers to any questions regarding the quality of the water, and the mineral productions of the soil. All they could say of the former was, that it was very hot, very foul, and as it were greasy; that it boils up in many places, and has a very offensive smell: and the latter remarkable only for the saline appearances above described. That country, however, in general, produces considerable quantities of iron, copper, and sulphur. After being purified it sells in the market here for about 15 rupees *per* maund; and I am assured, by many of the natives, that all the borax in India comes only from the place above mentioned.

I am afraid you will think this at best but a very unsatisfactory and unphilosophical account of the matter; but what can be done, where the only mode of information is through some of the wild and unsettled mountaineers? for the place is inaccessible even to the inhabitants of Hindostan, and has never been visited by any of them, except a few wandering Faquires, who have been sometimes led that way, either to do penance, or to visit some of the temples in the mountains. The cold in winter is described to be so intense that every thing is frozen up, and that life can only be preserved by loads of blankets and skins. In the summer again, the reflection from the sides of the mountains, which are steep and close to each other (there being little or no plain ground betwixt them), renders the heats insufferable.

I have not loaded this account with any reflections or conjectures of my own. I have simply given you the narrative of those from whom I had my information; and having put into
your

your possession all the *data* I have been able to collect upon the subject, you may make what use of them you please.

I shall conclude with a few observations regarding the credibility of the relation: and, first, that it is really brought from the Tibbet mountains is certain, as I have myself often had occasion to see large quantities of it brought down, and have purchased from the Tartar mountaineers, who brought it to market; secondly, I have never heard of its being either produced or brought into this country from any other quarter; and, thirdly, if it was made on the Coromandel coast, as some books mention, I think there can be little doubt, but that the whole process would have been fully enquired into, and given to the public long before this time.

Lucknow, August 28, 1786.

